AGENCY USE ONLY				
PERMIT NO.:	Date Rec'd.:	Amount Rec'd.:	Check No.:	Rec'd By:
MTG010167	11/4/13	$600	v#4220	bs

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PERMITTING & COMPLIANCE BY

Montana Department of
ENVIRONMENTAL QUALITY
WATER PROTECTION BUREAU

FORM
NOI

Notice of Intent (NOI) for Montana Pollution Discharge Elimination System Application for New and Existing Concentrated Animal Feeding Operations

The Application form is to be completed by the owner or operator of a Concentrated Animal Feeding Operation (CAFO) or Aquatic Animal Production Facility. Please read the attached instructions before completing this form. You must print or type legibly; forms that are not legible or are not complete will be returned. You must maintain a copy of the completed application form for your records.

Section A - Application Status *(Check one):*

- ☐ New — No prior application submitted for this site.
- ☐ Resubmitted — Permit Number: MTG _____
- ☑ Renewal — Permit Number: MTG 0 1 0 1 6 7 — 11/4/13
- ☐ Modification — Permit Number: MTG _____

Section B - Facility or Site Information *(See instruction sheet.):*

Site Name: Mountain View Colony

Site Location: 27-4N-24E

Nearest City or Town: Broadview County: Yellowstone

Latitude: 46.05649 Longitude: 108.72681

Date Facility began operation? September 1999

Is this facility or site located on Indian Lands? ☐ Yes ☑ No

Section C - Applicant (Owner/Operator) Information:

Owner or Operator Name: Joe P Kleinsasser

Mailing Address: 14435 Oswald Rd

City, State, and Zip Code: Broadview, MT 59015

Phone Number: (406)667-2291

Is the person listed above the owner? ☑ Yes ☐ No

Status of Applicant *(Check one)* ☐ Federal ☐ State ☑ Private ☐ Public ☐ Other (specify) _____

Section D - Existing or Pending Permits, Certifications, or Approvals: ☐ None

☑ MPDES MTG010000 ☐ RCRA _____

☐ PSD (Air Emissions) _____ ☐ Other _____

☐ 404 Permit (dredge & fill) _____ ☐ Other _____

Section E – Standard Industrial Classification (SIC) Codes:

Provide at least one SIC code which best reflects the activity of project described in Section H.			
Code	**A. Primary**	**Code**	**B. Second**
1	213- Hogs	2	241- Dairy Cows
Code	**C. Third**	**Code**	**D. Fourth**
3	259- Poultry and Eggs	3	251-Broiler, Fryer, and Roaster Chi

Section F - Facility or Site Contact Person/Position:

Name and Title, or Position Title Joe P Kleinsasser

Mailing Address 14435 Oswald Rd

City, State, and Zip Code Broadview, MT 59015

Phone Number (406) 667-2291

Section G – Receiving Surface Waters(s):

Outfall/Discharge Locations: For each outfall, List latitude and longitude to the nearest second and the name of the receiving waters

Outfall Number	Latitude	Longitude	Receiving Surface Waters
001	46.0668	108.73267	UN named drainage
002	46.05679	108.72397	UN known Drainage
003			
004			
005			

Map: Attach a topographic map extending one mile beyond the property boundaries or the site activity identified in Section B depicting the facility or activity boundaries, major drainage patterns, and the receiving surface waters, stated above. Also identify the specific location of the production area, and land application area(s).

Is the receiving water on the 303(d) list for nutrients (nitrogen and/or phosphorus) ☐ Yes ☑ No

	Type of Containment/Storage	Total Capacity	Units (gallons or tons)	Days of Storage
☐	Anaerobic Lagoon			
☑	Storage Pond #1	2500000	Gallons	180
☑	Storage Pond #2	2750000	Gallons	180
☐	Storage Pond #3			
☐	Storage Pond #4			
☐	Storage Pond #5			
☐	Above Ground Storage Tank			
☐	Below Ground Storage Tank #1			
☐	Below Ground Storage Tank #2			
☐	Underfloor Pits			
☐	Roofed Storage Shed			
☐	Concrete Pad			
☑	Impervious Soil Pad	1400	Tons	180
☐	Other (Specify:_____)			
☐	Other (Specify:_____)			

Physical Data for CAFO

Nutrient Management Plan

All Concentrated Animal Feeding Operations seeking permit coverage after July 31, 2007 are required to complete and implement a Nutrient Management (NMP). The NMP must be submitted to the Department using the form provided by the Department (Form NMP). Check the box below that applies and provide the required information. The NMP must be developed in accordance with ARM 17.30.1334 and implemented upon the effective date of permit coverage. (Check One)

☑ Does the facility have an NMP?

Date NMP was developed: January 2009

Date NMP was last modified:_____

☐ NMP has not been prepared; provide detailed explanation below

Section I – Supplemental Information

Receiving Water: Nearest Receiving water is 11 Miles away Big Lake, if a breach happened there is no state water would be affected.

Section G – Receiving Surface Water(s):
An outfall location is considered to be a discrete channel, conveyance, structure, or flow path from which the discharge leaves the boundary of the facility and/or enters surface water. "Surface waters" is defined in ARM 17.30.1102(32) as any waters on the earth's surface including, but not limited to, streams, lakes, ponds, reservoir, or other surface water including ephemeral and intermittent drainage ways and irrigation systems. Water bodies used solely for treating, transporting, or impounding pollutants shall not be considered surface water. Provide the following information in the table on the application form:

1. Assign a number to each outfall starting with 001. If the outfall is not well defined, assign the outfall number to the drainage area. For existing permittees, ensure outfall numbers used are consistent with those identified in the past for the same outfall.
2. Latitude/longitude can be derived from USGS 7.5 minute topographic map and/or "Topofineder" at http://nris.mt.gov/interactive.html . Latitude and longitude must be accurate to the nearest second.
3. Give the name of the surface waters that receive the discharge. If the discharge reports to a municipal storm sewer, please indicate so.
4. Please attach a USGS topographic map(s) indicating the boundary of your facility, major drainage patterns, and the receiving surface water(s).

The facility must check the CWAIC data base at http://cwaic.mt.gov/ to determine if the receiving water is impaired for nutrient (nitrate and/or phosphorus).

Section H – Concentrate Animal Feeding Operation Characteristics:
Waste Production, Storage and Disposal:
Report the maximum number of each type of animal confined at any one time and the type of confinement structure used for each (e.g. open feedlot, under roof.)

Manure, Litter, and/or Wastewater Production and Use:
To *transfer waste* means to give away or sell waste to another person for disposal on land owned or controlled by someone other than the permit applicant.

The term *"storage pond,"* includes, but is not limited to ponds, aerobic lagoons, evaporation ponds, manure holding cells, collection basins, settling basins, bermed or diked areas used for impounding waste, and temporary or seasonal waste holding ponds.

"Production area" means that part of an Animal Feeding Operation (AFO) that includes the animal confinement area, the manure storage area, the raw materials storage area, and the waste containment areas. The *animal confinement area* includes but is not limited to open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milk rooms, milking centers, cow yards, barnyards, medication pens, walkers, animal walkways, and stables. The *manure storage area* includes but is not limited to lagoons, runoff ponds, storage sheds, stockpiles, under house or pit storage, liquid impoundments, static piles, and composting piles. The *raw materials storage area* includes but is not limited to feed silos, silage bunkers, and bedding materials. The *waste containment area* includes but not limited to settling basins, and areas within berms and diversion which separate uncontaminated storm water. Also include in the definition of production area is any egg washing or egg processing facility, and any area used in storage, handling, treatment, or disposal of mortalities.

"Land application area" means land under control of AFO owner or operator, whether it is owned, rented, or leased, to which manure, litter or process wastewater from the production area is or may be applied.

Section I - Supplemental Information:
Use the space provided to expand upon any information requested in the application or information you wish to bring to the attention of the reviewer. Attach additional sheets, if necessary. For applicants requesting a modification to an existing authorization or site-specific Nutrient Management Plan (aka Form NMP), provide and explanation of the requested modification.

Common Standard Industrial Classification (SIC) Codes

Division	SIC	Industrial Activity Represented
Agriculture, Forestry and Fishing	211	Beef Cattle Feedlots
	212	Beef Cattle, Except Feedlots
	213	Hogs
	214	Sheep and Goats
	241	Dairy Farms
	251	Broiler, Fryer and Roaster Chickens
	252	Chicken Eggs
	253	Turkeys and Turkey Eggs
	254	Poultry hatcheries
	259	Poultry and Eggs, not elsewhere classified (Ducks)
	272	Horses and other Equines
	921	Fish Hatcheries and Preserves
Mining	1021	Copper Ores
	1031	Lead and Zinc
	1044	Silver Ores
	1041	Gold Ores
	1221	Bituminous Coal and Lignite Surface Mining
	1311	Crud Petroleum and Natural Gas
	1442	Construction Sand and Gravel
Construction	1521	General Contractor - Single Family Houses
	1522	General Contractor - Residential Bldgs. Other Than Single Family
	1542	General Contractor - Nonresidential Buildings, Other than Industrial Buildings and Warehouses
	1611	Highway and Street Construction, Except Elevated Highways
	1622	Bridge, Tunnel, and Elevated Highway construction
	1623	Water, Sewer, Pipeline, communications & Power Line Construction
	1629	Heavy construction, Not Elsewhere Classified
	1794	Excavation Work
	7349	Building Cleaning and Maintenance Services, Not Elsewhere
Manufacturing	2011	Meat Packing Plants
	2063	Beet Sugar
	2421	Sawmills and Planning Mills, General
	2611	Pulp Mills
	2911	Petroleum Refining
	3241	Cement, Hydraulic
Transportation, Communications, Electric, Gas and Sanitary Services	4911	Electric Services
	4941	Water Supply
	4952	Sewerage Systems
	4953	Refuse Systems
Wholesale Trade	5093	Scrap and Waste Materials
	5154	Livestock
	5171	Petroleum Bulk Stations and Terminals
Retail Trade	5541	Gasoline Service Station
	5984	Liquefied Petroleum Gas (Bottled Gas) Dealers
Services	7011	Hotels and Motels
	7033	Recreational Vehicle Parks and Campsites
	7542	Carwashes
Public Administration	9224	Fire Protection
	9711	National Security

Section J - CERTIFICATION

Permittee Information:

This Form NMP must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)	
Joe P K Leinsasser	
B. Title (Type or Print)	**C. Phone No.**
Farm - Manager	406-667-2291
D. Signature	**E. Date Signed**
Joe P Kleinsasser	10-28-2013

The Department will not process this form until all of the requested information is supplied, and the appropriate fees are paid. Return this form (NOI) and the applicable fee to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

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Form NOI – Application for New and Existing Concentrated Animal Feeding Operations and Aquatic Animal Production Facilities

Important: Do not use this form to transfer permit coverage to a new owner or operator, you must use Form PTN. You must provide the information requested for this application to be complete. Responses must be self-explanatory and must not refer exclusively to attached maps, plans or documents. The appropriate fees must accompany this Form NOI. Mail this to the DEQ address stated on the form. You must maintain a copy of the completed form for your records. CAFO General Permit and the Fish Farm General Permit documents and related forms are available at (406) 444-3080 or on the DEQ website at: http://www.deq.mt.gov.

Please type or print legibly; applications that are not legible or are not complete will be rejected.

SPECIFIC ITEM INSTRUCTIONS

Section A – Application Status

Check the box that applies and provide the requested information. If Form NOI has not been previously submitted for this site, check the first box (New). DEQ will assign a permit number when the form is submitted. The permit number is a 9-digit code beginning with MTG010. If you submitted a Form NOI and DEQ deemed the application deficient or incomplete, check the second box (Resubmitted); If you were notified by DEQ that the permit coverage expired or will expire and you are now submitting an NOI to continue coverage check the third box (Renewal); if there is a change in the facility information (Section H or Section I), check the last box (Modification). If a NOI has been submitted and deemed deficient then the permit number will appear in the deficiency letter. If the site is covered under the *General Permit for Concentrated Animal Feeding Operations* or the *General Permit for Fish farms,* the number is given on the Authorization letter sent to you by DEQ. The permit number must be included on any correspondence with DEQ regarding this site.

Section B – Facility Information:

Identify the legal name of the facility that is subject to permit coverage. The facility is the land or property where the facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity. Give the address or location of this facility and the geographical information. The location may be the physical mailing address or description of how the facility may be accessed. (PO Boxes are not acceptable.) Latitude and longitude must be accurate to the nearest second. Sources include GPS, a USGS topographic map, and/or "Topofinder" from http://nris.mt.gov/interactive.asp.

Section C – Applicant (Owner/Operator) Information:

Give the name, as it is legally referred to, of the person, business, public organization, or other entity that owns, operates, controls or supervises the facility described in Section B of this Form. The operator is the legal entity which controls the facility operation. The permit will be issued to the entity identified in this section (Section C). The owner or operator assumes all liability for discharges of the facility and compliance with the permit. If the owner or operator is other than a person or government entity it must be registered with the Montana Secretary of State's office.

Section D – Existing or Pending Permits, Certification, or Approvals:

List, in descending order of significance, the four digit standard industrial codes that best describe the activities at this facility. Also, provide a brief description in the space provided. A complete list of SIC Codes (and conversion form the newer North American Industry Classification System (NAICS)) can be obtained from the Internet at http://www.census.gov/epcd/www/naics.html or in paper from the document entitled "Standard Industrial Classification Manual", Office Management and Budget, 1987. SIC Code listings may also be found at http://www.osha.gov/pls/imis/sicsearch.html. At least on SIC code must be provided. See attached table for common SIC codes.

Section F – Facility Contact Person/Position:

Give the name, title, and work phone number of a person who is thoroughly familiar with the operation of the facility and the facts reported in this form, and who can be contacted by DEQ for additional information. Those facilities with periodic changes in the contact person may provide the contact person's position instead of a person's name.

AGENCY USE ONLY				
PERMIT NO.: MTG-010167	Date Rec'd.: 11/4/13	Amount Rec'd.: $600	Check No.: ✓#4220	Rec'd By: DS

Montana Department of ENVIRONMENTAL QUALITY

WATER PROTECTION BUREAU

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PERMITTING & COMPLIANCE DIV.

FORM
NMP

Nutrient Management Plan

READ THIS BEFORE COMPLETING FORM: Before completing this form (Form NMP), Concentrated Animal Feeding Operation (CAFO) operators need to read the General Permit, particularly Part IV.A. CAFO operators also need to read the "Instructions For filling out Form NMP," found at the back of this form. Form NMP is intended to help CAFO operators develop a site-specific Nutrient Management Plan, in compliance with Part IV.A of the General Permit and all applicable State rules and statutes. Your Nutrient Management Plan must be maintained at the site as required in Part III of the General Permit. Sections B and C on your Form NMP must state the information exactly the same way as it was stated on the most recently submitted version of your NOI-CAFO. Attach additional pages as necessary, indicating the corresponding section number on this NMP form. The 2013 General Permit, current fee schedule, and related forms are available from the Water Protection Bureau at (406) 444-3080 or http://www.deq.mt.gov/wqinfo/MPDES/CAFO.asp

Section A – NMP Status:

- ☐ New — No prior NMP submitted for this site.
- ☐ Resubmitted — Previous NMP found incomplete.
- ☐ Modification — Change or update to existing NMP.
- ☑ New 2013 — New 2013 version of NMP.

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Section B – Facility Information:

Facility Name Mountain View Colony

Facility Location T4N R24E S27

Nearest City of Town Broadview County Yellowstone

Section C – Applicant (Owner/Operator Information):

Owner or Operator Name Joe P Kleinsasser

Mailing Address 14435 Oswald Rd

City, State, and Zip code Broadview, MT 59015

Facility Phone Number (406)667-2291

Email NONE

Section D – NMP Minimum Elements:

1. Livestock Statistics		
Animal Type and number of animals	**# of Days on Site (per year)**	**Annual Manure Production (tons, cu. yds. or gal**
1. See attachment	See Attachment	See attachment
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Method used for estimating annual manure production:
NRCS- Manure management Planner tool and DEQ 9, table 1 part 2 page 13
Measure ponds liquid, and weigh manure trucks.

2. Manure Handling

a. Describe Manure handling at the facility:
See Attachment

b. Frequency of Manure Removal from confinement areas:
See attachment

c. Is this manure temporarily stored in any location other than the confinement area? ☑ Yes ☐ No
If so then how and where?
Lagoons are used to separate solids and liquids. Hog manure is flushed to Stage 1. Dairy is pumped to stage 1 when ground is frozen.

d. Is manure stored on impervious surface? ☑ Yes ☐ No
If yes, describe type and characteristics of this surface:
Lagoons are compacted clay. Three monitoring wells are located adjacent to lagoons and sampled annually with results sent to DEQ (see map for location) Temporary dairy pile is compacted clay surface. Rest of surfaces are compacted clay surfaces.

Animal Type and Number of animals	# of days on site (per Year)	Annual Manure Production
Dairy- Calves- 50	365	25185 gallons
Heifers/steers- 20	365	16790 gallons
heifers/steers/bred heifers-151	210	579 tons
Milk Cows- 140	365	955570 gallons
Swine- Nursery- 2500	365	273759 gallons
Finishers- 5000	365	1989192 gallons
sows- 320	365	167724 gallons
Boars- 18	365	6505 gallons
Poultry- Layers- 18900	365	517 tons
chicks- 2500	365	48 tons
broilers- 8000	50	38 tons
turkeys- 3000	130	67 tons
ducks- 800	90	15 tons

2. Manure Handling

a. Describe Manure handling at the facility:

Hog barns have under- barn pits. When full (about every 15 days) they are pumped to Stage 1. Dairy barn has under – barn pits, when full (about every 15 days) they are pumped to Stage 1. When the ground is frozen, it is hauled to Stage 1. Lots are stockpiled and hauled to field as needed throughout the year. Dairy corral manure is hauled to field throughout the year. Duck, broilers, turkey manure (offsite) is stockpiled after each 'set' and hauled to field yearlong when necessary. Onsite chicken barn manure is stockpiled with dairy manure solids hauled to field throughout the year.

B. Frequency of Manure Removal from confinement areas:

Hog barn pits are drained every 7 days. Dairy barn is pumped every 14 days. When pad is full it is hauled to days compost pad (every 7-14 days). Compost pad is hauled to fields 1-2 times a year. Beef pens are scraped annually. Lagoons are emptied twice a year. Poultry manure is removed after each set (up to 6 times a year) and hauled to fields directly, if fields are frozen it is hauled to stack pad.

Land Application Equipment Calibration Describe the type of equipment used to land apply wastes and the calibration procedures:

Dairy manure is hauled to field directly when ground is frozen via spreader broadcasted, and incorporated. Poultry manure is applied via spreader. Dairy and hog manure is hauled to field via liquid tanker and broadcasted.

3. Waste Control Structures					
Waste Control Structures (name/type)	**Length (ft.)**	**Width (ft.)**	**Depth (ft.)**	**Volume (cubic ft. or gallons)**	**Number of days of storage**
1. Stage 1 Lagoon	250	100	16	2500000 G	180
2. Stage 2 Lagoon	250	100	16	2750000 G	180
3. Hog Barn 1 Pit	280	8	2	4480 CF	14
4. Hog barn 2 pit	200	8	2	3200 CF	14
5. Dairy Barn Pit	90	16	8	95000 G	14
6.					
7.					
8.					
9.					
10.					
11.					
12.					

What is the 24 hr. 25 yr. storm event at this facility 2.7 inches

Production area: 30 **acres.** **Type of lot (dirt or paved):** dirt

Area contributing drainage form outside CAFO that enters confinement areas and waste storage, conveyance, or treatment structures: 0 **acres.**

What is the annual precipitation during the critical storage period 6

How much freeboard do the pond(s) have 2 feet

4. Disposal of Dead Animals.

Describe how dead animals are disposed of at this facility:
Mortalities are placed into dairy solids manure pile and allowed to compost.

5. Clean Water Diversion Practices

Describe how clean water is diverted from production area:
Clean water is diverted away from confinement area north of dairy barn and flows directly into field 4 to the West of Lagoons.

6. Prohibiting Animals and Wastes from Contact with State Waters
Describe how animals and wastes are prohibited from direct contact with state waters:
No state waters are located on the facility. All watering is completes in-house or in Corrals.

Describe how Chemicals and other contaminants are handled on-site:
No chemicals are housed on site.

7. Best Management Practice (BMPS)

Describe in detail all temporary, permanent and structural BMPS which will be used to control runoff of pollutants from facility's production area. Indicate the location of these measures. If BMPS are not installed include a schedule for implementation of each of these measures. Examples of BMP measures could include but are not limited to: constructing ditches, terraces,, and waterways above and open lot to divert clean water run on; installing gutters, downspouts and buried conduits to divert roof drainage; providing more roofed area: decreasing open lot surface area; repairing of adjusting water systems to minimize water wastage; using practical amounts of water for cooling purposes; recycling water if practical and applicable.
Production Area BMP's
Clean water is diverted away from confinement areas to field 4, to the west. Lagoons all have substantial berms, livestock do not have access to any state water. Dirty water runoff flows into small dirty water pit (see Map) and allow to evaporate liquid.

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's land production area. Indicate the location of these practices. If not already in use, include a schedule for implementation of each of these measures. Attached details and specifications may be used to supplement this description. Examples of BMP measures could include but are not limited to: maintaining setbacks from surface waters for manure applications; managing irrigation practices to prevent ponding of wastewater on land application sites;

never spray irrigating waste on to frozen ground: consulting with the Department prior to applying any liquid waste to frozen or snow-covered ground; applying wastes at agronomic rates.

Land Application BMP's
Soil and manure are tested annually. Manure is not spread within 100 ft of residences and wells, not within 25 ft of ditches, and areas of concern are monitored. Equipment is calibrated prior to spreading. manure is not applied to frozen soils.

Buffers	☐ Yes ☐ No	**Conservation Tillage**	☑ Yes ☐ No
Constructed Wetlands	☐ Yes ☐ No	**Grass Filter**	☐ Yes ☐ No
Infiltration Field	☐ Yes ☐ No	**Residue Management**	☐ Yes ☐ No
Set backs	☐ Yes ☐ No	**Terrace**	☐ Yes ☐ No

Other examples
Minimum till or no-till practices are established on all crop land. Manure injection, plant sampling and analysis. Manure applied at agronomic Rates.

8. Implementation, Operation, Maintenance and Record Keeping – Guidance

The permittee is required to develop guidance addressing implementation of NMP, proper operation and maintenance of the facility, and record keeping as described in Part 2 of the permit.

Has a guidance document been developed for the facility? ☑ Yes ☐ No

Certify the document address the following requirements:

Implementation of the NMP:	☑ Yes ☐ No
Facility operation and maintenance:	☑ Yes ☐ No
Record keeping and reporting	☑ Yes ☐ No
Sample collection and analysis:	☑ Yes ☐ No
Manure transfer	☐ Yes ☑ No

Provide name, date and location of most recent documentation:
February 2009- Developed with NRCS

If your answer to any of the above question is no, provide explanation:
No manure is transferred off site

Section E – Land Application

Will manure be land applied to land either owned, rented, or leased by the owner or operator of the facility?

☑ Yes If yes, then the information requested in Section E must be provided.

☐ No If no, then provide an explanation of how animal waste at this facility are managed.

Photos and/or Maps

Attach an aerial photograph or map of the site where manure is to be applied. (Use multiple photos/maps if necessary to show required details.) The photo(s)/map(s) must be printed on no larger than an 11"X 17" piece of paper, and must clearly identify the following items:

- Individual field boundaries for all planned land application areas
- A name, number, letter or other means of identifying each individual land application field
- The location of any downgradient surface waters.
- The location of any downgradient open tile line intake structures
- The location of any downgradient sinkholes
- The location of any downgradient agricultural well heads
- The location of all conduits to surface waters
- The specific manure/waste handling or nutrient management restrictions associated with each land application field
- The soil type(s) present and their locations within the individual land application field(s)
- The location of buffers and setbacks around state surface waters, well heads, etc.

Land Application Equipment Calibration

Describe the type of equipment used to land apply wastes and the calibration procedures:

See attachment

Manure Sampling and Analysis Procedures

A representative manure sample will be analyzed a minimum of once annually for Total Nitrogen, and Total Phosphorus. Analysis results will be reported in lbs/ton or lbs/1,000 gal. Results of these analyses will be used in determining rates for manure, litter, and process wastewater.
Manure Sample collection will occur according to ARM 17.30.1334

Other (describe)

NRCS Methods described in literature, sent to certified lab.

Soil Sampling and Analysis Procedures

Representative soil (composite) samples from the top 6 inches layer of soil for each field where manure will be applied must be analyzed for phosphorus content at least once every three years. Analyses will be conducted by a qualified laboratory, using the Olsen P test. Results will be reported in parts per million (ppm) and will be used in determining application rates for manure, litter, and process wastewater

Soil samples collection will occur according the methods in ARM 17.30.1334

Other (describe)

Phosphorus Risk Assessment

The permittee shall access the risk of phosphorus contamination of state waters. An assessment shall be conducted for each field, under the control of the operator, to which manure, litter or process wastewater will or

may be applied. If a new field is added in the future, then the permittee must submit a revised (modified) NMP. The permittee has the option of using Method A or Method B (below) to complete the assessment. Copies of all tables and calculations used to complete the assessments, as well as the results of the assessments, shall be submitted to the Department and copies shall be maintained on-site at the facility and available for Departmental review. The results of the assessments shall be used to determine the appropriate basis for land application of wastes from the facility.

Method Used

Indicate which method will be used to determine phosphorus application:

Method A – Representative Soil Sample
Method B – Phosphorus Index

Method A – Representative Soil Sample

a. Obtain one or more representative soil sample(s) from the field per 17.30.1334
b. Have the sample analyzed for Phosphorus by a qualified lab. The "Olsen P test" must be used for the analysis, and the result must be reported in parts per million (ppm)
c. Using the results of the Olsen P test, determine application basis according to the Table below.

Soil Test

Olsen P Soil Test Results (ppm)	Application Basis
<25.0	Nitrogen Needs of Crop
25.1 - 100.0	Phosphorus Needs of Crop
100.0 – 150.0	Phosphorus Needs up to Crop Removal Rate
>150.0	No Application allowed

Method B – Phosphorus Index

a. Complete a phosphorus Index according to the crop grown on each field. Complete table in Appendix A to calculate phosphorus index. For information on filling out specific sections in Appendix A, please refer to the method as described in Natural Resource Conservation Service (NRCS), Agronomy Technical Note MT-77 (rev3), January 2006.
b. Using the calculated Total Phosphorus Index Value, assign the overall site/field vulnerability to phosphorus loss according to the table below.

Total Phosphorus

Total Phosphorus Index Value	Site Vulnerability to Phosphorus Loss
<11	Low
11-21	Medium
22-43	High
>43	Very High

c. Using the calculated Site Vulnerability to Phosphorus Loss, determine the appropriate application basis according to the table below.

Site Vulnerability to Phosphorus Loss	Application Basis
Low	Nitrogen Needs
Medium	Nitrogen Needs
High	Phosphorus Need Up to Crop Removal
Very High	Phosphorus Crop Removal or No Application

The applicant has 2 ways in which to report how manure or process wastewater application rates can be reported to DEQ.

1. **Linear Approach**. Expresses rates of application as pounds of nitrogen and phosphorus. CAFOs selecting the linear approach to address rates of application must include in the NMP submitted to the permitting authority the following information for each crop, field, and year covered by the NMP, which will be used by the permitting authority to establish site-specific permit terms:
- The maximum application rate (pounds/acre/year of nitrogen and phosphorus) from manure, litter, and process wastewater.
- The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. [If a state does not have an N transport risk assessment, the NMP must document any basis for assuming that nitrogen will be fully used by crops.] The CAFO must specify any conservation practices used in calculating the risk rating.
- The crops to be planted or any other uses of a field such as pasture or fallow fields.
- The realistic annual yield goal for each crop or use identified for each field.
- The nitrogen and phosphorus recommendations from in ARM 17.30.1334 (technical standard) for each crop or use identified for each field.
- Credits for all residual nitrogen in each field that will be plant-available.
- Consideration of multi-year phosphorus application. For any field where nutrients are applied at a rate based on the crop phosphorus requirement, the NMP must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement.
- All other additions of plant available nitrogen and phosphorus (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen).
- The form and source of manure, litter, and process wastewater to be land-applied.
- The timing and method of land application. The NMP also must include storage capacities needed to ensure adequate storage that accommodates the timing indicated.
- The methodology that will be used to account for the amount of nitrogen and phosphorus in the manure, litter, and wastewater to be applied.
- Any other factors necessary to determine the maximum application rate identified in accordance with this Linear Approach.

2. **Narrative Rate Approach**. Expresses a narrative rate of application that results in the amount, in tons or gallons, of manure, litter, and process wastewater to be land applied. CAFOs selecting the narrative rate approach to address rates of application must include in the NMP submitted to the permitting authority the following information for each crop, field, and year covered by the NMP, which will be used by the permitting authority to establish site-specific permit terms:
- The maximum amounts of nitrogen and phosphorus that will be derived from all sources of nutrients (pounds/acre for each crop and field).
- The outcome of the field-specific assessment of the potential for nitrogen and phosphorus transport from each field. The CAFO must specify any conservation practices used in calculating the risk rating.
- The crops to be planted in each field or any other uses of a field such as pasture or fallow fields, including alternative crops if applicable. Any alternative crops included in the NMP must be listed by field, in addition to the crops identified in the planned crop rotation for that field.
- The realistic annual yield goal for each crop or use identified for each field for each year, including any alternative crops identified.
- The nitrogen and phosphorus recommendations from ***[the permitting authority to specify acceptable sources]*** for each crop or use identified for each field, including any alternative crops identified.
- The methodology (including formulas, sources of data, protocols for making determination, etc.) and actual data that will be used to account for: (1) the results of soil tests required by Parts II.A.4.b and III.A.3.g of this

permit, (2) credits for all nitrogen in the field that will be plant- available, (3) the amount of nitrogen and phosphorus in the manure, litter, and process wastewater to be applied, (4) consideration of multi-year phosphorus application (for any field where nutrients are applied at a rate based on the crop phosphorus requirement, the methodology must account for single-year nutrient applications that supply more than the crop's annual phosphorus requirement), (5) all other additions of plant available nitrogen and phosphorus to the field (i.e., from sources other than manure, litter, or process wastewater or credits for residual nitrogen), (6) timing and method of land application, and (7) volatilization of nitrogen and mineralization of organic nitrogen.
- Any other factors necessary to determine the amounts of nitrogen and phosphorus to be applied in accordance with the Narrative Rate Approach.
- NMPs using the Narrative Rate Approach must also include the following projections, which will not be used by the permitting authority in establishing site-specific permit terms:

i. Planned crop rotations for each field for the period of permit coverage.
ii. Projected amount of manure, litter, or process wastewater to be applied.
iii. Projected credits for all nitrogen in the field that will be plant-available.
iv. Consideration of multi-year phosphorus application.
v. Accounting for other additions of plant-available nitrogen and phosphorus to the field.
vi. The predicted form, source, and method of application of manure, litter, and process wastewater for each crop

- If the receiving water is on the 303(d) list for nutrients then the narrative rate approach must be used.

a. For the Linear Approach the permittee will complete the Nutrient Budget Worksheet, below, for the next 5 years to which manure or process waste water is or may be applied. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Section F - CERTIFICATION

Permittee Information: This form must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information; including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)	
Joe P Kleinsasser	
B. Title (Type or Print)	**C. Phone No.**
Farm Manager	406-667-2291
D. Signature	**E. Date Signed**
Joe P Kleinsasser	10-28-2013

The Department will not process this form until all of the requested information is supplied, and the appropriate fees are paid. Return this form and the applicable fee to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

RECEIVED
NOV 04 2013
DEQ/WPB
PERMITTING & COMPLIANCE DIV.

Nutrient Budget Worksheet

Field identification: MY-West Year: 2014 Crop: S-W

Expected Crop Yield: 30

Phosphorus index results or Phosphorus application from soil test: Medium

Method of Application: Injection

When will application occur: November

		Nutrient Budget	Nitrogen-based Application	Phosphorus-based Application	Source of information
1		Crop Nutrient Needs, lbs/acre	99	31	EB 161
2	(-)	Credits from previous Soil legume crops, lbs/ac Test	29	0	
3	(-)	Residuals from past manure production lbs/acre	0	0	
4	(-)	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre	0		
5	(-)	Nutrients supplied in irrigation water, lbs/acre	0	0	
6		**= Additional Nutrients Needed, lbs/acre**	70		
7		Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1000 gal (from manure test)	12.7	2.4	
8	(x)	Nutrient Availability factor, for Phosphorus based application use 1.0	65%	100	NRCS
9		**= Available Nutrients in Manure, lbs/ton or lbs/1000 gal**	8.9		
10		Additional Nutrients needed, lbs/acre (calculated above)	70	31	
11	(/)	Available Nutrients in Manure, lbs/ton or lbs/1000 gal (calculated above)	8.9	2.4	
12		**= Manure Application Rate, tons/acre or 1000 gal/acre**	7800	12900	

Comments:

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2013 NOV -1 P 2:42

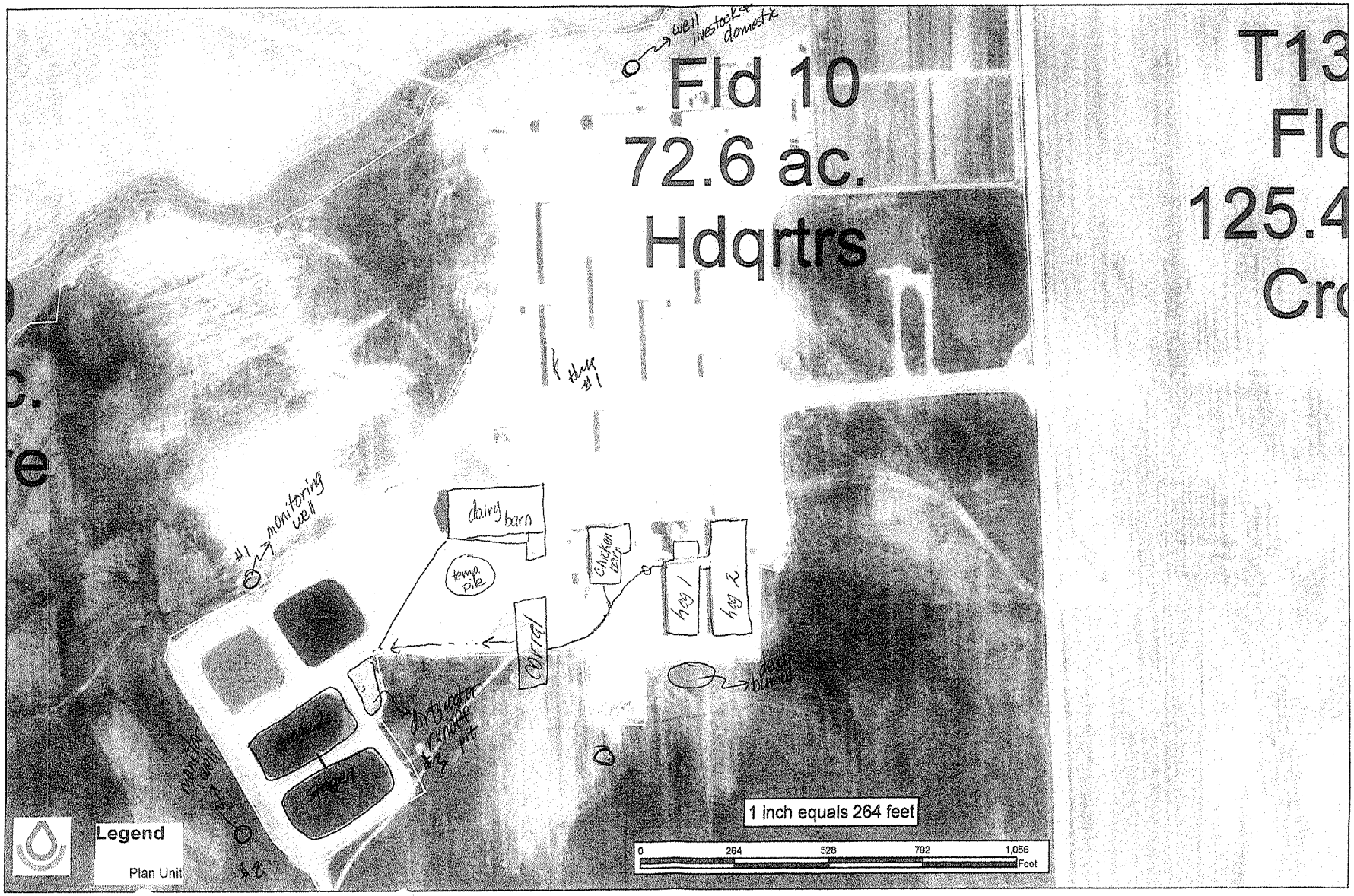
Appendix A: Phosphorus Index Worksheet (Complete for each field and crop)

Field: My-West **Crop:** ~~Rice~~ S-W **Year:** 2014

Field Category Factor	None (0)	Low (1)	Medium (2)	High (4)	Very High (8)	Risk Value (0,1,2,4,8)	Weight Factor	Weight Risk
Soil Erosion	NA	<5 tons/as/yr	5-10 ton/ac/yr	10-15 tons/ac/yr	QA> 10 for erodible soils	1	X 1.5	1.5
Furrow Irrigation Erosion	N/A	Tail water recovery, QS>6 very erodible soils, or QS>10 other soils	QS> for erosion resistant soil	QS> for erodible soils	QA>6 for very erodible soils	0	X 1.5	0
Sprinkler Irrigation Erosion	All fields 0-3% slope, all sandy fields or field evaluation indicates little or no runoff large spray on silts 3-8%	Medium spray on silty soils 3-15% slopes, large spray on silty soils 8-15% slope, low spray on silt soils 3-8% large spray on clay soil 3-15% slope	Medium spray on clay soils 3-8% slopes, large spray on clay soils >15% slope, medium spray on silt soil >15% slope	Medium spray on clay soils >8% slope, low spray on clay soil 3-8% slope, low spray on silty soils >15% slopes	Low spray on clay soils >8% slopes	0	X 1.5	0
Runoff Class	Negligible	Very Low or Low	Medium	High	Very High	2	X 0.5	1
Olson Soil Test P	———	<20 ppm	20-40 ppm	40-80 ppm	>80 ppm	1	X 0.5	0.5
Commercial P Fertilizer Application Method	None Applied	Placed with Planter or injection deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop emerges	Surface applied to pasture or >3 months before crop emerges	1	X 1.0	1.0
Commercial P Fertilizer Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205	1	X 1.0	1.0
Organic P Source Application Method	None Applied	Injected deeper than 2 inches	Incorporated <3 months prior to planting or surface applied during growing season	Incorporated >3 months before crop or surface applied <3 months before crop.	Surface applied to pasture or >3 months before crop emerges	4	X 1.0	4.0
Organic P Source Application Rate	None Applied	<30 lbs/ac P205	31-90 lbs/ac P205	91-150 lbs/ac P205	>150 lbs/ac P205	2.	X 1.0	2.0
Distance to Concentrated Surface Water Flow	>1,000 feet	200-1,000 feet, or functioning grass waterways in concentrated surface water	100-200 feet	<100 feet	0 feet or application are directly into concentrated surface water flow areas.	1	X 1.0	1.0
Total Phosphorus Index Value:								12.00

Customer(s): MOUNTAIN VIEW COLONY INC

State and County: MT, YELLOWSTONE



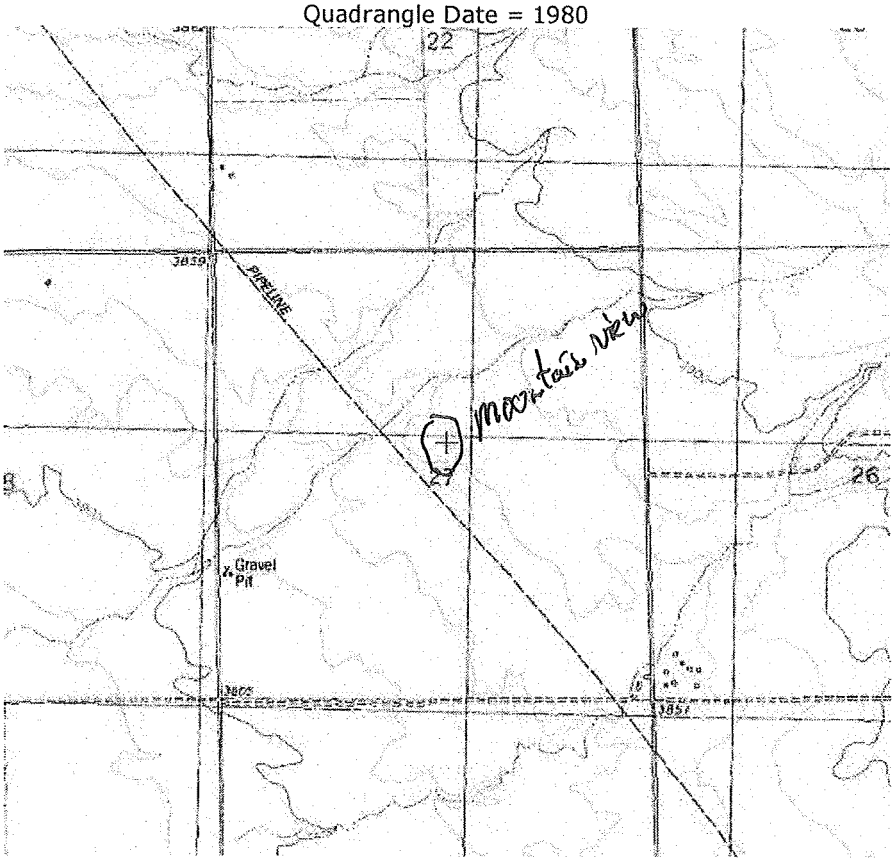
Montana Topographic Map Finder

The map is 2.06 miles wide.

Choose Image Type

Topographic Map | Refresh

Quadrangle Date = 1980



Select a Map Control, then click on the map

Map Controls

ZoomIn Zoom Factor 3

ZoomOut

New Center State View

Map Center Coordinates at Red +

Datum: NAD83 NAD27

Decimal Degrees
Lat 46.06855 Long -108.72614

State Plane
E 659842 N 202390

UTM Zone 12
E 675851 N 5104177

US National Grid
12T XS 75851 04177

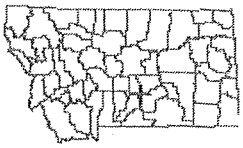
TRS T4N R24E S27

Hydrologic Unit 10070007
Upper Yellowstone River-Pompeys Pillar

Download 24K quadrangle: Hay Basin South

Download 100K quadrangle: Roundup

Click the small map to move the main map center.



Legend | Help

Map Size: Extra Large Large Small | Refresh

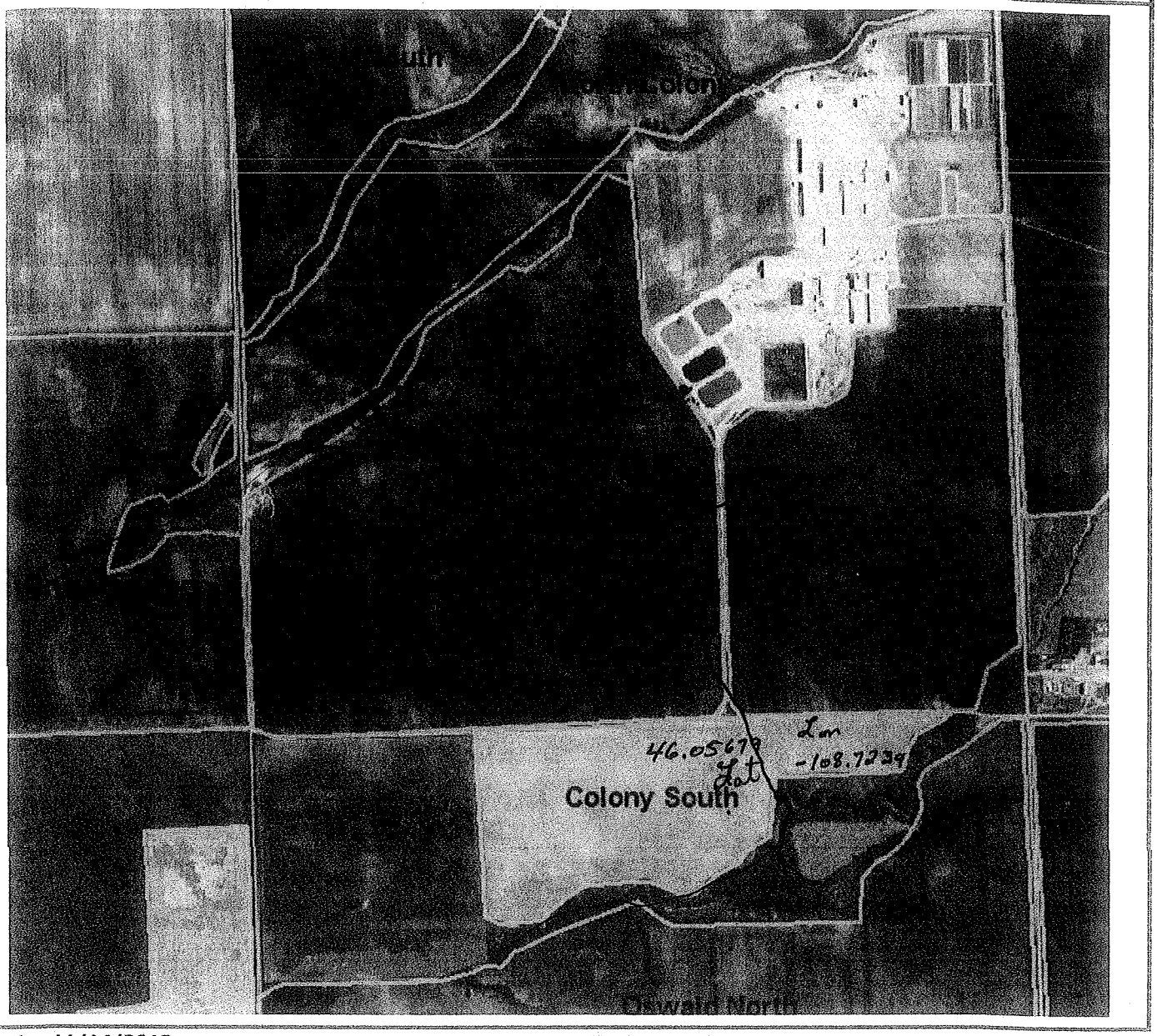
Search Tools

Click Here to view other map data for this area.

Montana State Library Geographic Information

Technical questions about the application can be directed to geoinfo@mt.gov
Please let us know if you have problems with the Topofinder!!

Mountain View Farm



Date: 11/14/2013
Farm: Mountain View Farm
Grower: Mountain View Colony
Area: [redacted]

N

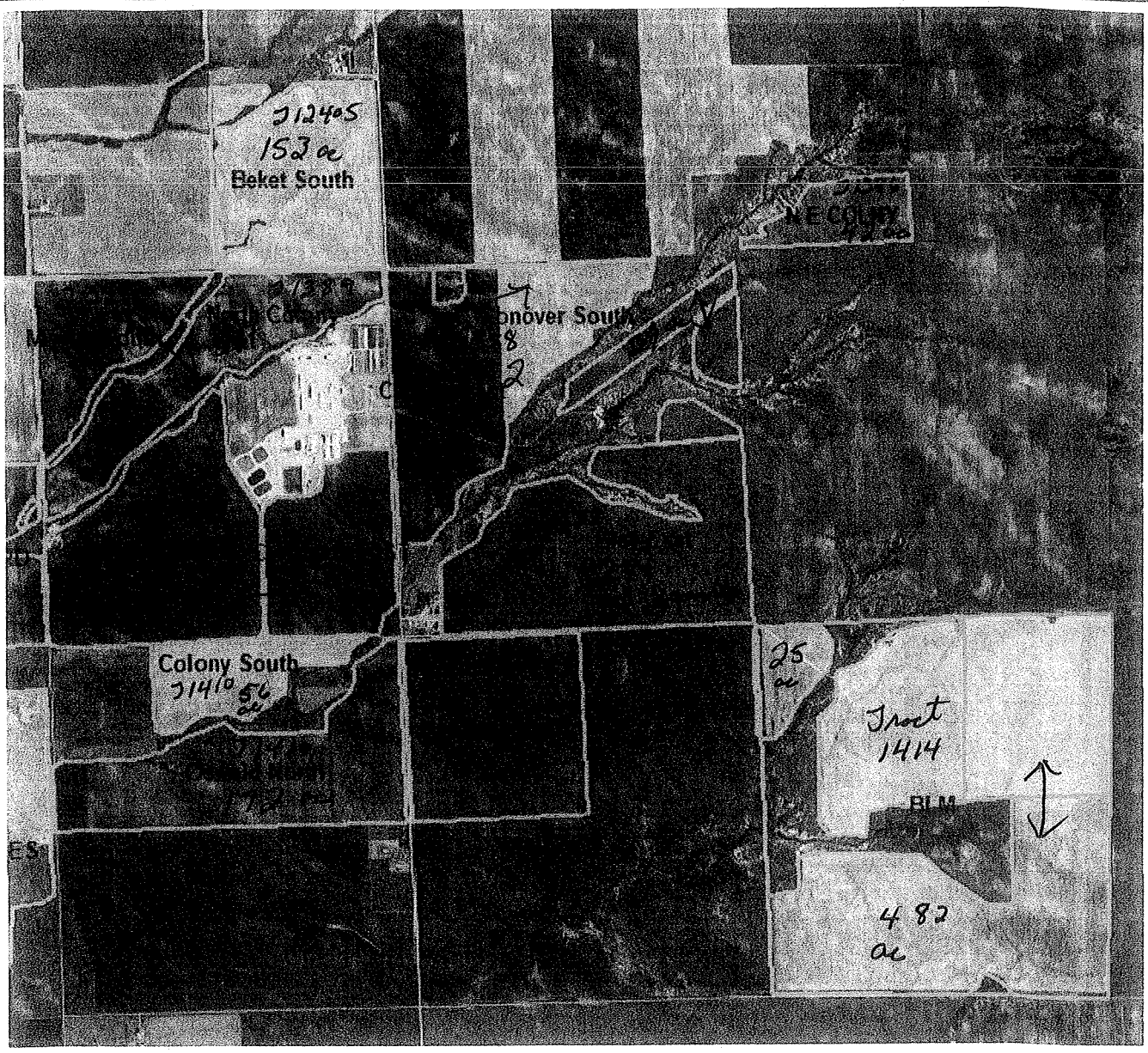
One in = 1065 feet

0 357 714 1072 1429 1786

Mountain View Farm [redacted]

Irr. dable ac

Mountain View Farm



Date: 11/14/2013
Farm: Mountain View Farm
Grower: Mountain View Colony
Area:

N

One in = 2396 feet

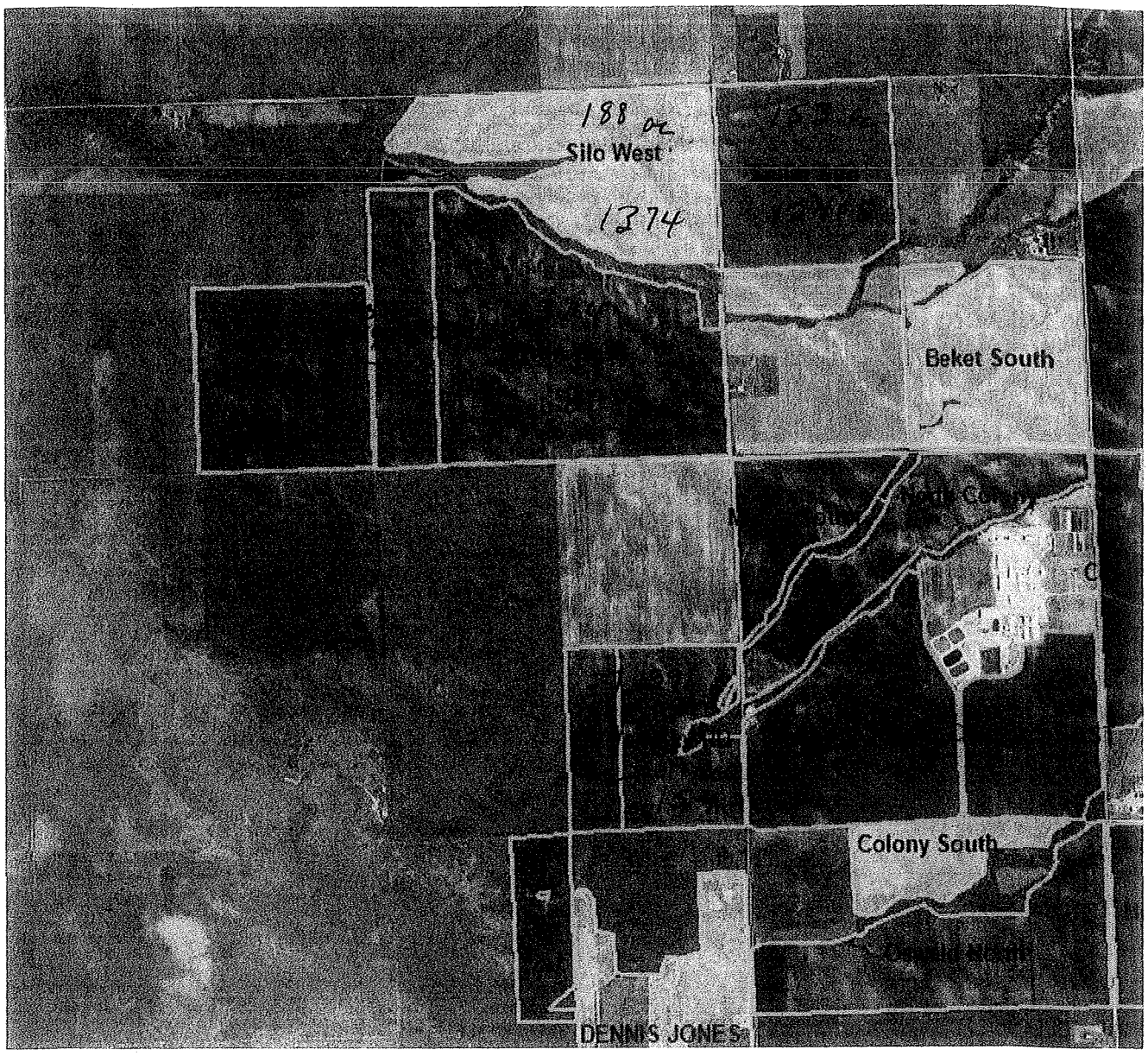
0 804 1607 2411 3215 4019

Mountain View Farm

2215 ac
1096
3311 ac

spreadable ac

Mountain View Farm



Date: 11/14/2013
Farm: Mountain View Farm
Grower: Mountain View Colony
Area 10 96

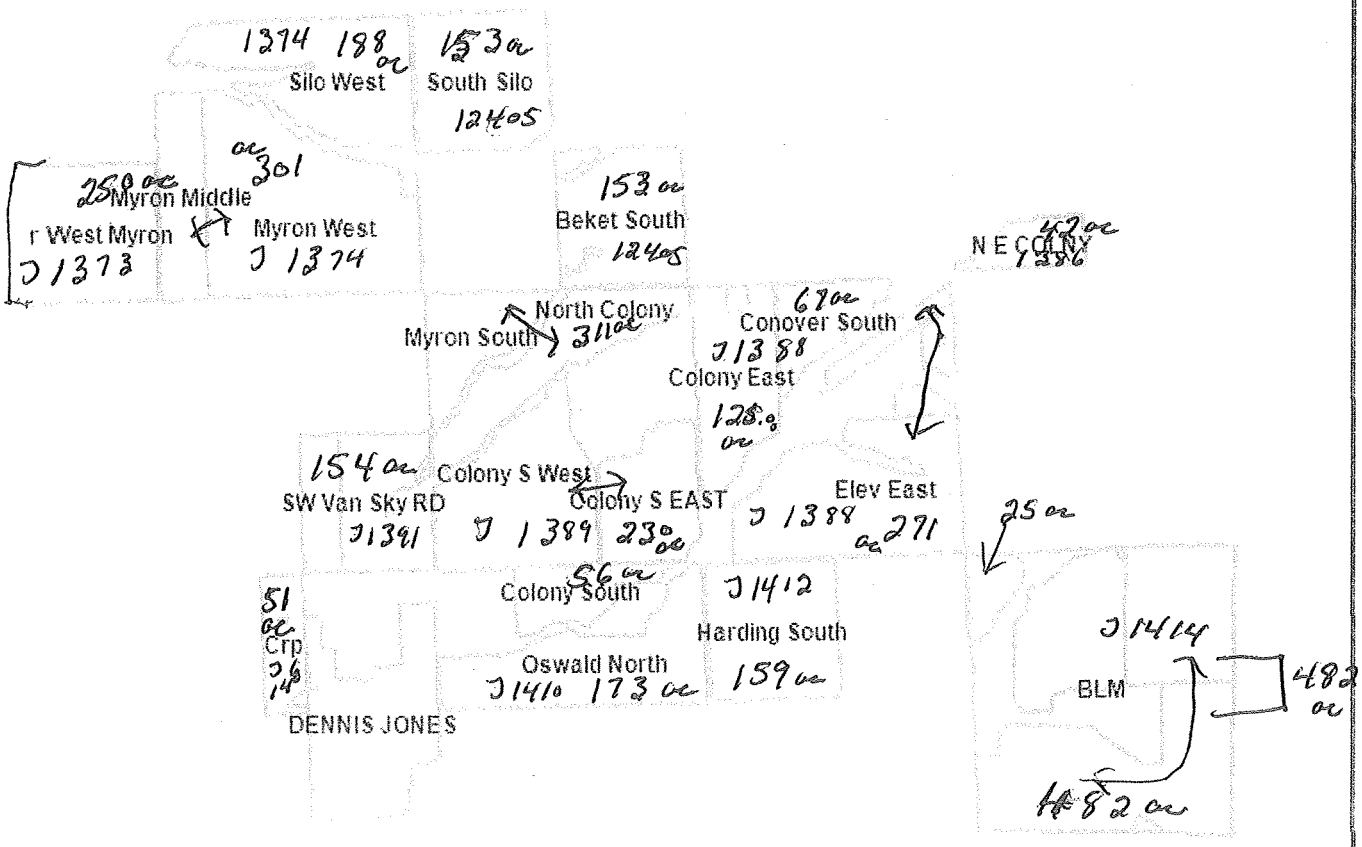
N

One in = 2396 feet
0 804 1607 2411 3215 4019

Mountain View Farm (-

Spreadable ac

Mountain View Farm



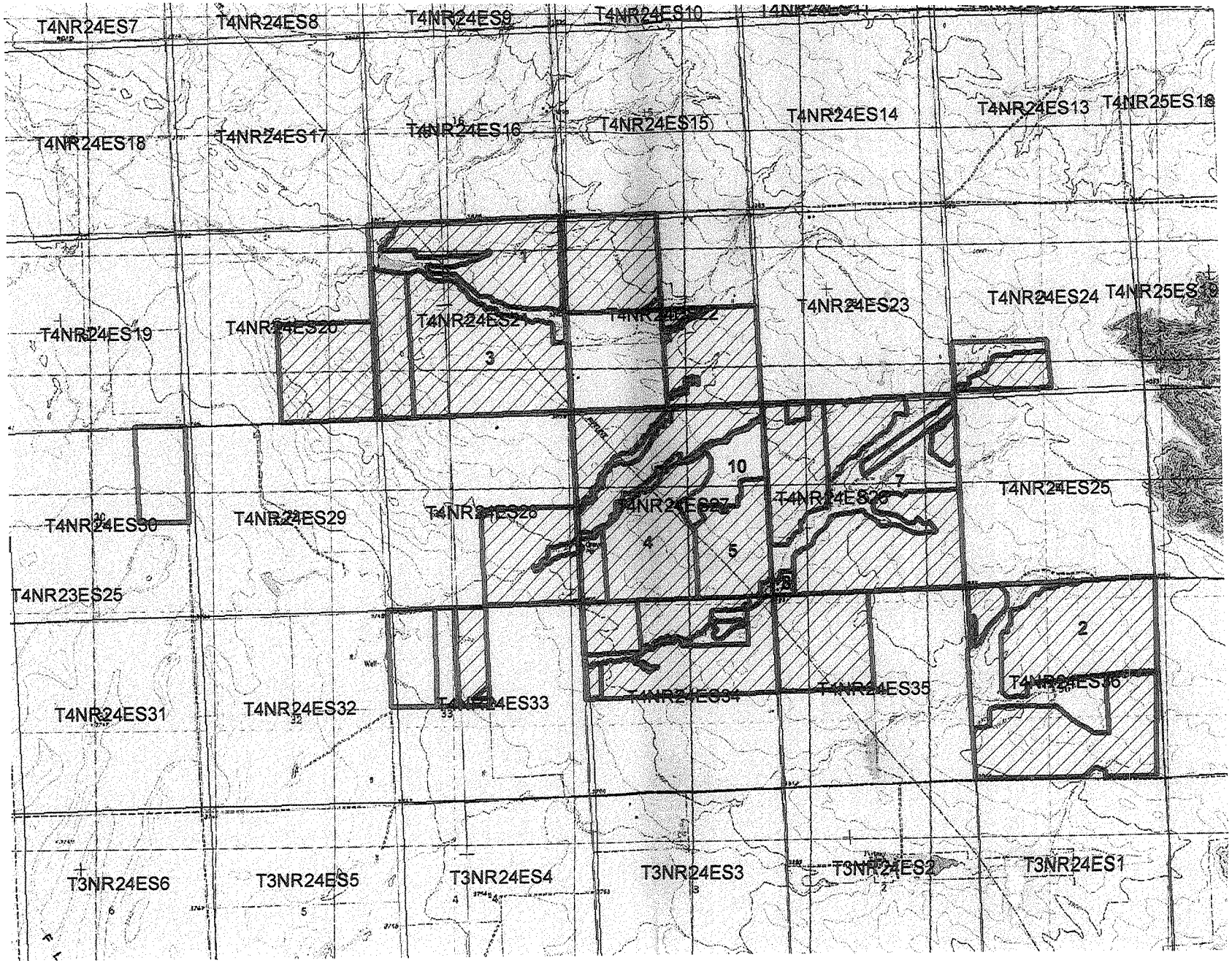
Date: 11/14/2013
Farm: Mountain View Farm
Grower: Mountain View Colony
Area: ~~6,488.0 ac~~ 3311 ac

N

One in = 0.7 miles

0.0 0.2 0.5 0.7 0.9 1.1

Mountain View Farm [redacted]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5
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T4NR24ES35
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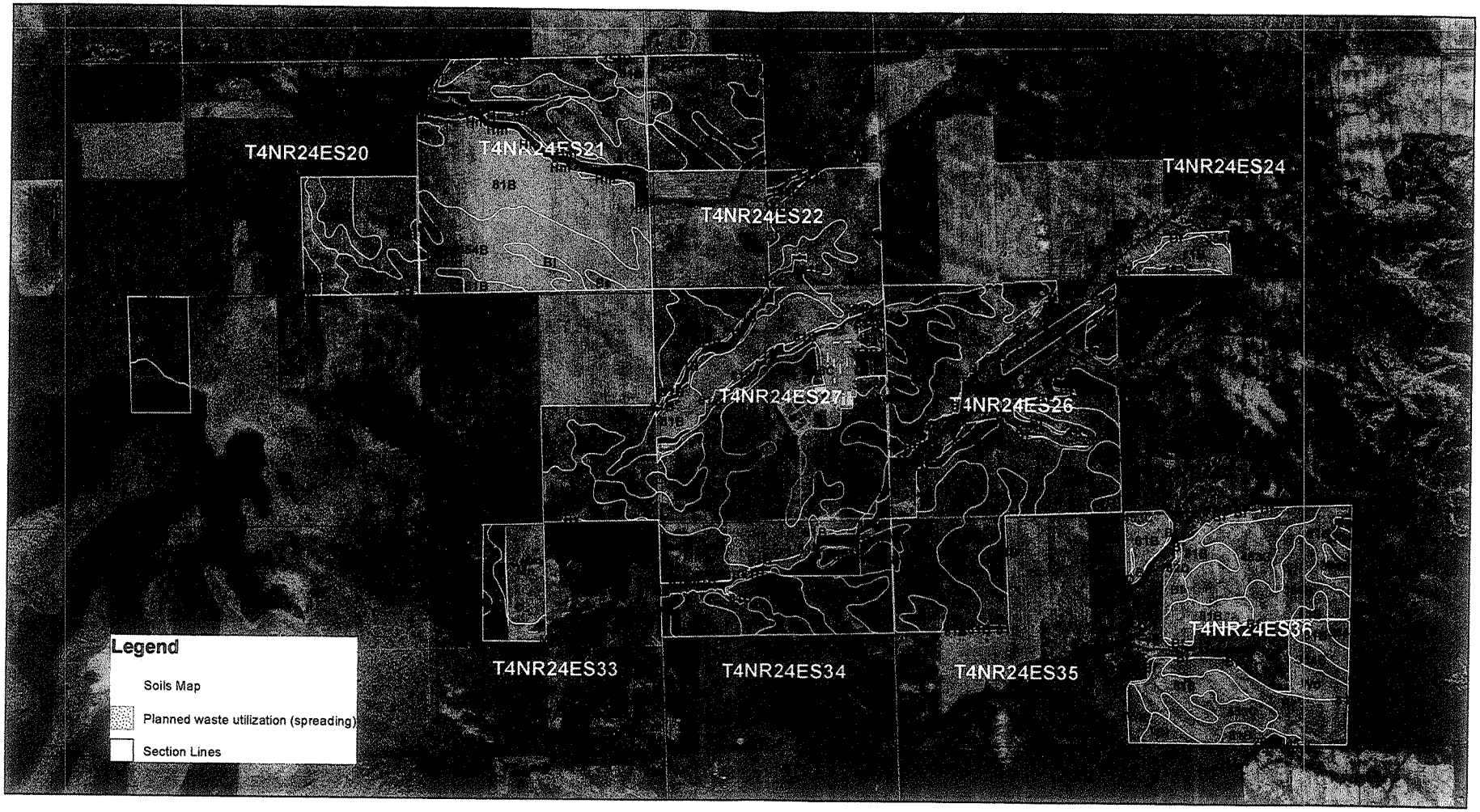
T3NR24ES6
T3NR24ES5
T3NR24ES4
T3NR24ES3
T3NR24ES2
T3NR24ES1

Customer(s): MOUNTAIN VIEW COLONY INC

Soils Map, Animal Waste Spreading Area

Field Office: BILLINGS FIELD OFFICE
Agency: USDA/NRCS
Assisted By: PHILIP SANDOVAL



Date: 9/9/2014

Map Unit Descriptions (MT)

Yellowstone County, Montana

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

81B--Delpoint-Cabbart loams, 2 to 8 percent slopes

Mean annual precipitation: 10 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days

Delpoint and similar soils

Extent: about 55 percent of the unit
Landform(s): low hills on plains
Slope gradient: 2 to 8 percent
Parent material: loamy residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 4e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 3 in	Loam	moderate	0.5 to 0.6 in	6.6 to 8.4	.32	.32
Bw -- 3 to 11 in	Loam	moderate	1.1 to 1.4 in	6.6 to 8.4	.32	.32
Bk -- 11 to 22 in	Loam	moderate	1.5 to 2.0 in	7.9 to 9.0	.37	.37
Cr -- 22 to 60 in	Bedrock	moderately slow				

Cabbart and similar soils

Extent: about 35 percent of the unit
Landform(s): low hills on plains
Slope gradient: 2 to 8 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6s
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 4 in	Loam	moderate	0.7 to 0.8 in	7.4 to 9.0	.28	.28
Bk1 -- 4 to 10 in	Loam	moderate	0.9 to 1.1 in	7.4 to 9.0	.32	.32
Bk2 -- 10 to 16 in	Loam	moderate	0.9 to 1.2 in	7.4 to 9.0	.32	.32
Cr -- 16 to 60 in	Bedrock	moderately slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Twilight and similar soils: 5 percent of the unit
Yamacall and similar soils: 3 percent of the unit
Bonfri and similar soils: 2 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

83D--Cabbart-Rock outcrop-Blacksheep complex, 8 to 45 percent slopes

Mean annual precipitation: 10 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days

Cabbart and similar soils

Extent: about 35 percent of the unit
Landform(s): hills on plains
Slope gradient: 8 to 45 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 3 in	Loam	moderate	0.5 to 0.7 in	7.4 to 9.0	.28	.28
Bk1 --	3 to 7 in	Loam	moderate	0.6 to 0.8 in	7.4 to 9.0	.32	.32
Bk2 --	7 to 12 in	Loam	moderate	0.6 to 0.8 in	7.4 to 9.0	.32	.32
Cr --	12 to 60 in	Bedrock	moderately slow				

Rock outcrop

Extent: about 30 percent of the unit
Landform(s):
Slope gradient:
Parent material:
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Land capability class, nonirrigated: 8
Drainage class:
Hydric soil:
Hydrologic group:
Potential frost action:

Ecological site(s): ---

Representative soil profile:

Texture	Permeability	Available water capacity	pH	Kw	Kf

none

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Blacksheep and similar soils

Extent: about 25 percent of the unit
Landform(s): hills on plains
Slope gradient: 8 to 45 percent
Parent material: residuum weathered from calcareous sandstone
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 4 in	Sandy loam	moderately rapid	0.5 to 0.6 in	7.4 to 8.4	.20	.20
Bk -- 4 to 18 in	Fine sandy loam	moderately rapid	1.8 to 2.3 in	7.9 to 8.4	.37	.37
Cr -- 18 to 60 in	Bedrock	moderately slow				

Minor Components

Twilight and similar soils: 4 percent of the unit
Yawdim and similar soils: 3 percent of the unit
Busby and similar soils: 3 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

182D--Cabbart-Delpoint loams, 4 to 15 percent slopes

Mean annual precipitation: 10 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days

Cabbart and similar soils

Extent: about 45 percent of the unit
Landform(s): low hills on plains
Slope gradient: 4 to 15 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 4 in	Loam	moderate	0.7 to 0.8 in	7.4 to 9.0	.28	.28
Bk1 --	4 to 10 in	Loam	moderate	0.9 to 1.1 in	7.4 to 9.0	.32	.32
Bk2 --	10 to 16 in	Loam	moderate	0.9 to 1.2 in	7.4 to 9.0	.32	.32
Cr --	16 to 60 in	Bedrock	moderately slow				

Delpoint and similar soils

Extent: about 40 percent of the unit
Landform(s): low hills on plains
Slope gradient: 4 to 15 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 4e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
Ap --	0 to 3 in	Loam	moderate	0.5 to 0.6 in	6.6 to 8.4	.32	.32
Bw --	3 to 11 in	Loam	moderate	1.1 to 1.4 in	6.6 to 8.4	.32	.32
Bk --	11 to 22 in	Loam	moderate	1.5 to 2.0 in	7.9 to 9.0	.37	.37
Cr --	22 to 60 in	Bedrock	moderately slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Yamacall and similar soils: 5 percent of the unit
Rock outcrop: 5 percent of the unit
Blacksheep and similar soils: 2 percent of the unit
Yawdim and similar soils: 3 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

282D--Cabbart-Blacksheep complex, 4 to 15 percent slopes

Mean annual precipitation: 10 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days

Cabbart and similar soils

Extent: about 45 percent of the unit
Landform(s): low hills on plains
Slope gradient: 4 to 15 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 4 in	Loam	moderate	0.7 to 0.8 in	7.4 to 9.0	.28	.28
Bk1 -- 4 to 10 in	Loam	moderate	0.9 to 1.1 in	7.4 to 9.0	.32	.32
Bk2 -- 10 to 16 in	Loam	moderate	0.9 to 1.2 in	7.4 to 9.0	.32	.32
Cr -- 16 to 60 in	Bedrock	moderately slow				

Blacksheep and similar soils

Extent: about 35 percent of the unit
Landform(s): low hills on plains
Slope gradient: 4 to 15 percent
Parent material: residuum weathered from calcareous sandstone
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 4 in	Sandy loam	moderately rapid	0.5 to 0.6 in	7.4 to 8.4	.20	.20
Bk -- 4 to 18 in	Fine sandy loam	moderately rapid	1.8 to 2.3 in	7.9 to 8.4	.37	.37
Cr -- 18 to 60 in	Bedrock	moderately slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Yawdim and similar soils: 3 percent of the unit
Delpoint and similar soils: 12 percent of the unit
Rock outcrop: 3 percent of the unit
Yamacall and similar soils: 2 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

354B--Bonfri-Cabbart loams, 0 to 4 percent slopes

Mean annual precipitation: 10 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days

Bonfri and similar soils

Extent: about 45 percent of the unit
Landform(s): low hills on plains
Slope gradient: 0 to 4 percent
Parent material: residuum weathered from sandstone and shale
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 7 in	Loam	moderate	1.3 to 1.6 in	6.6 to 7.8	.28	.28
Bt -- 7 to 23 in	Clay loam	moderately slow	2.4 to 2.8 in	6.6 to 7.8	.32	.32
Bk -- 23 to 36 in	Clay loam	moderately slow	1.9 to 2.3 in	7.4 to 8.4	.37	.37
Cr -- 36 to 60 in	Bedrock	moderate	0.0 to 0.0 in			

Cabbart and similar soils

Extent: about 40 percent of the unit
Landform(s): low hills on plains
Slope gradient: 2 to 4 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6s
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 4 in	Loam	moderate	0.7 to 0.8 in	7.4 to 9.0	.28	.28
Bk1 -- 4 to 10 in	Loam	moderate	0.9 to 1.1 in	7.4 to 9.0	.32	.32
Bk2 -- 10 to 16 in	Loam	moderate	0.9 to 1.2 in	7.4 to 9.0	.32	.32
Cr -- 16 to 60 in	Bedrock	moderately slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Eapa and similar soils: 5 percent of the unit
Twilight and similar soils: 5 percent of the unit
Tanna and similar soils: 5 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

453C--Cabbart-Bonfri loams, 2 to 8 percent slopes

Mean annual precipitation: 10 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days

Cabbart and similar soils

Extent: about 50 percent of the unit
Landform(s): low hills on plains
Slope gradient: 2 to 8 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6s
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Shallow (Sw) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 4 in	Loam	moderate	0.7 to 0.8 in	7.4 to 9.0	.28	.28
Bk1 -- 4 to 10 in	Loam	moderate	0.9 to 1.1 in	7.4 to 9.0	.32	.32
Bk2 -- 10 to 16 in	Loam	moderate	0.9 to 1.2 in	7.4 to 9.0	.32	.32
Cr -- 16 to 60 in	Bedrock	moderately slow				

Bonfri and similar soils

Extent: about 40 percent of the unit
Landform(s): low hills on plains
Slope gradient: 2 to 8 percent
Parent material: residuum weathered from sandstone and shale
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 7 in	Loam	moderate	1.3 to 1.6 in	6.6 to 7.8	.28	.28
Bt -- 7 to 23 in	Clay loam	moderately slow	2.4 to 2.8 in	6.6 to 7.8	.32	.32
Bk -- 23 to 36 in	Clay loam	moderately slow	1.9 to 2.3 in	7.4 to 8.4	.37	.37
Cr -- 36 to 60 in	Bedrock	moderate	0.0 to 0.0 in			

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Tanna and similar soils: 3 percent of the unit
Blacksheep and similar soils: 2 percent of the unit
Delpoint and similar soils: 5 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Ay--Arvada-Bone clays, 0 to 1 percent slopes

Mean annual precipitation: 12 to 15 inches
Mean annual temperature:
Frost-free period: 115 to 135 days

Arvada and similar soils

Extent: about 70 percent of the unit
Landform(s): fans, plains, terraces
Slope gradient: 0 to 1 percent
Parent material: alluvium
Restrictive feature(s): natric at 0 to 8 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 6s
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
E -- 0 to 4 in	Loam	moderately slow	0.6 to 0.7 in	6.6 to 7.8	.37	.37
Btn -- 4 to 28 in	Clay	very slow	2.4 to 3.1 in	7.4 to 9.0	.28	.28
Bkny -- 28 to 60 in	Clay loam	very slow	2.6 to 3.2 in	7.9 to 9.0	.32	.32

Bone and similar soils

Extent: about 20 percent of the unit
Landform(s): fans, lakebeds (relict), plains, terraces
Slope gradient: 0 to 1 percent
Parent material: alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7s
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Ecological site(s): Saline Upland (SU) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Btk -- 0 to 3 in	Silty clay	very slow	0.4 to 0.5 in	6.6 to 8.4	.32	.32
C1 -- 3 to 52 in	Silty clay	very slow	2.9 to 3.4 in	7.8 to 9.6	.32	.32
C2 -- 52 to 62 in	Stratified loam to clay	very slow	0.6 to 0.7 in	7.8 to 9.6	.28	.28

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Hydro and similar soils: 6 percent of the unit

Vananda and similar soils: 4 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Bf--Bainville-Elso-Shale outcrop complex, 7 to 25 percent slopes

Mean annual precipitation: 11 to 14 inches
Mean annual temperature: 39 to 50 degrees F
Frost-free period: 120 to 135 days

Elso and similar soils

Extent: about 40 percent of the unit
Landform(s): hills, plains
Slope gradient: 7 to 25 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Silty-Steep 11-14" p.z. Deleted. Refer to site: R058AC049MT

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 2 in	Clay loam	moderate	0.3 to 0.4 in	7.4 to 9.0	.24	.24
Bk1 --	2 to 5 in	Loam	moderate	0.5 to 0.6 in	7.4 to 9.0	.43	.43
Bk2 --	5 to 12 in	Silty clay loam	moderate	1.0 to 1.3 in	7.4 to 9.0	.43	.43
Cr --	12 to 60 in	Bedrock	slow				

Bainville and similar soils

Extent: about 40 percent of the unit
Landform(s): hills, plains
Slope gradient: 7 to 25 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Silty-Steep 11-14" p.z. Deleted. Refer to site: R058AC049MT

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
Ap --	0 to 3 in	Loam	moderate	0.5 to 0.7 in	6.6 to 7.8	.37	.37
C --	3 to 30 in	Clay loam	moderate	4.6 to 5.6 in	7.4 to 8.4	.37	.37
Cr --	30 to 60 in	Bedrock	moderately slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Rock outcrop, shale

Extent: about 10 percent of the unit
Landform(s):
Slope gradient:
Parent material:
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Land capability class, nonirrigated:
Drainage class:
Hydric soil: no
Hydrologic group:
Potential frost action:

Ecological site(s): ---

Representative soil profile:

Texture	Permeability	Available water capacity	pH	Kw	Kf

none

Minor Components

Cushman and similar soils: 3 percent of the unit
McRae and similar soils: 3 percent of the unit
Razor and similar soils: 1 percent of the unit
Rock outcrop, shale: 10 percent of the unit
Worland and similar soils: 3 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

BI--Bainville-Worland complex, 4 to 7 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 39 to 50 degrees F
Frost-free period: 120 to 135 days

Bainville and similar soils

Extent: about 65 percent of the unit
Landform(s): hills, plains
Slope gradient: 4 to 7 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 3 in	Loam	moderate	0.5 to 0.7 in	6.6 to 7.8	.37	.37
C -- 3 to 30 in	Clay loam	moderate	4.6 to 5.6 in	7.4 to 8.4	.37	.37
Cr -- 30 to 60 in	Bedrock	moderately slow				

Worland and similar soils

Extent: about 25 percent of the unit
Landform(s): hills, plains
Slope gradient: 4 to 7 percent
Parent material: residuum weathered from sandstone
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 4
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 4e
Drainage class: well drained
Hydric soil: no
Hydrologic group: A
Potential frost action: moderate

Ecological site(s): Sandy (Sy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 4 in	Fine sandy loam	moderately rapid	0.5 to 0.6 in	7.4 to 8.4	.28	.28
C -- 4 to 40 in	Fine sandy loam	moderately rapid	4.0 to 5.1 in	7.4 to 8.4	.37	.37
R -- 40 to 60 in	Bedrock	slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

McRae and similar soils: 6 percent of the unit
Rock outcrop: 4 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Bs--Big Horn clay loam, 0 to 2 percent slopes

Mean annual precipitation: 11 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 120 to 130 days

Big Horn and similar soils

Extent: about 85 percent of the unit
Landform(s): hills, plains
Slope gradient: 0 to 2 percent
Parent material: residuum
Restrictive feature(s): paralithic bedrock at 40 to 60 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 4
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 3c
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
Ap --	0 to 7 in	Clay loam	moderately slow	1.0 to 1.3 in	6.6 to 7.8	.17	.17
Bt --	7 to 19 in	Clay	slow	1.5 to 1.9 in	6.6 to 7.8	.20	.20
Bk --	19 to 55 in	Clay	slow	4.3 to 5.4 in	7.4 to 8.4	.24	.24
Cr --	55 to 60 in	Bedrock	slow				

Minor Components

Bainville and similar soils: 7 percent of the unit
Cushman and similar soils: 8 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Ec--Elso clay loam, 4 to 7 percent slopes

Mean annual precipitation: 11 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 120 to 130 days

Elso and similar soils

Extent: about 80 percent of the unit
Landform(s): hills, plains
Slope gradient: 4 to 7 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6s
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 2 in	Clay loam	moderate	0.3 to 0.4 in	7.4 to 9.0	.24	.24
Bk1 -- 2 to 5 in	Loam	moderate	0.5 to 0.6 in	7.4 to 9.0	.43	.43
Bk2 -- 5 to 12 in	Silty clay loam	moderate	1.0 to 1.3 in	7.4 to 9.0	.43	.43
Cr -- 12 to 60 in	Bedrock	slow				

Minor Components

Heldt and similar soils: 4 percent of the unit
Razor and similar soils: 8 percent of the unit
Bainville and similar soils: 8 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

El--Elso clay loam, 7 to 15 percent slopes

Mean annual precipitation: 11 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 120 to 130 days

Elso and similar soils

Extent: about 80 percent of the unit
Landform(s): hills, plains
Slope gradient: 7 to 15 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 2 in	Clay loam	moderate	0.3 to 0.4 in	7.4 to 9.0	.24	.24
Bk1 -- 2 to 5 in	Loam	moderate	0.5 to 0.6 in	7.4 to 9.0	.43	.43
Bk2 -- 5 to 12 in	Silty clay loam	moderate	1.0 to 1.3 in	7.4 to 9.0	.43	.43
Cr -- 12 to 60 in	Bedrock	slow				

Minor Components

Razor and similar soils: 6 percent of the unit
Bainville and similar soils: 5 percent of the unit
Heldt and similar soils: 5 percent of the unit
Lohmiller and similar soils: 4 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Fr--Fort Collins and Thurlow clay loams, 0 to 1 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 36 to 48 degrees F
Frost-free period: 120 to 135 days

Fort Collins and similar soils

Extent: about 45 percent of the unit
Landform(s): fans, foothills, terraces
Slope gradient: 0 to 1 percent
Parent material: loamy alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: B
Potential frost action: moderate

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 8 in	Clay loam	moderate	1.1 to 1.4 in	6.6 to 7.8	.24	.24
Bt -- 8 to 18 in	Clay loam	moderate	1.4 to 1.8 in	7.4 to 8.4	.32	.32
Ck -- 18 to 60 in	Loam	moderate	6.7 to 7.5 in	7.9 to 9.0	.37	.37

Thurlow and similar soils

Extent: about 45 percent of the unit
Landform(s): fans, plains, terraces
Slope gradient: 0 to 1 percent
Parent material: alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 8 in	Clay loam	moderately slow	1.3 to 1.4 in	6.6 to 7.3	.17	.17
Bt -- 8 to 17 in	Silty clay loam	moderately slow	1.3 to 1.4 in	6.6 to 8.4	.32	.32
Bk -- 17 to 60 in	Clay loam	moderately slow	6.0 to 6.9 in	7.4 to 8.4	.32	.32

Minor Components

McRae and similar soils: 10 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

He--Haverson silty clay loam, 1 to 3 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 37 to 45 degrees F
Frost-free period: 120 to 135 days

Haverson and similar soils

Extent: about 85 percent of the unit
Landform(s): flood plains, plains, terraces
Slope gradient: 1 to 3 percent
Parent material: alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: rare
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 12 in	Clay loam	moderately slow	1.7 to 2.1 in	7.4 to 8.4	.32	.32
C -- 12 to 68 in	Stratified fine sandy loam to clay loam	moderate	7.9 to 10.1 in	7.4 to 8.4	.20	.20

Minor Components

Lohmiller and similar soils: 9 percent of the unit
Grail and similar soils: 6 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Hm--Haverson and Lohmiller soils, channeled, 0 to 35 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 37 to 45 degrees F
Frost-free period: 120 to 135 days

Haverson and similar soils

Extent: about 40 percent of the unit
Landform(s): flood plains, plains, terraces
Slope gradient: 0 to 2 percent
Parent material: alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: rare
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 6w
Drainage class: well drained
Hydric soil: no
Hydrologic group: B
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A --	0 to 5 in	Loam	moderate	0.8 to 1.0 in	6.1 to 8.4	.37	.37
C --	5 to 68 in	Stratified fine sandy loam to clay loam	moderate	8.8 to 11.3 in	7.4 to 9.0	.20	.20

Lohmiller and similar soils

Extent: about 40 percent of the unit
Landform(s): flood plains, plains, terraces
Slope gradient: 25 to 35 percent
Parent material: alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: low

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A --	0 to 9 in	Silty clay loam	moderately slow	1.4 to 1.8 in	7.4 to 8.4	.32	.32
C --	9 to 60 in	Stratified silty clay to silty clay loam	slow	7.1 to 9.1 in	7.9 to 8.4	.37	.37

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Hysham and similar soils: 5 percent of the unit
Glenberg and similar soils: 8 percent of the unit
Grail and similar soils: 7 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Ho--Heldt silty clay loam, 4 to 7 percent slopes

Mean annual precipitation: 13 to 15 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 115 to 125 days

Heldt and similar soils

Extent: about 85 percent of the unit
Landform(s): fans, plains, terraces
Slope gradient: 4 to 7 percent
Parent material: alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 3 in	Silty clay loam	moderately slow	0.5 to 0.6 in	6.6 to 8.4	.32	.32
Bw -- 3 to 17 in	Silty clay loam	slow	1.9 to 2.5 in	7.4 to 8.4	.32	.32
Bk -- 17 to 63 in	Silty clay loam	slow	6.4 to 8.3 in	7.9 to 9.0	.32	.32

Minor Components

Elso and similar soils: 6 percent of the unit
Midway and similar soils: 9 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Hx--Hysham-Laurel loams, 0 to 2 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 37 to 48 degrees F
Frost-free period: 120 to 135 days

Hysham and similar soils

Extent: about 60 percent of the unit
Landform(s): flood plains, plains, terraces
Slope gradient: 0 to 2 percent
Parent material: loamy alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 6s
Drainage class: moderately well drained
Hydric soil: no
Hydrologic group: B
Potential frost action: moderate

Ecological site(s): Saline Lowland (SL) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 7 in	Loam	moderate	0.7 to 0.9 in	7.4 to 9.0	.32	.32
C -- 7 to 60 in	Stratified fine sandy loam to clay loam	moderate	5.3 to 6.3 in	7.4 to 9.0	.20	.20

Laurel and similar soils

Extent: about 30 percent of the unit
Landform(s): fans, plains, terraces
Slope gradient: 0 to 2 percent
Parent material: loamy alluvium
Restrictive feature(s): none
Seasonal high water table: approximately 24 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 7w
Drainage class: somewhat poorly drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Saline Lowland (SL) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ayz -- 0 to 10 in	Loam	moderate	0.8 to 1.0 in	8.4 to 9.6	.28	.28
C -- 10 to 60 in	Stratified loam to fine sandy loam	moderately slow	4.0 to 5.0 in	9.0 to 9.6	.37	.37

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Lohmiller and similar soils: 5 percent of the unit
Haverson and similar soils: 4 percent of the unit
Lallie and similar soils: 1 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Kn--Kyle silty clay, 4 to 7 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 120 to 135 days

Kyle and similar soils

Extent: about 85 percent of the unit
Landform(s): hills, plains
Slope gradient: 4 to 7 percent
Parent material: colluvium derived from clayey shale and/or residuum weathered from clayey shale
Restrictive feature(s): paralithic bedrock at 40 to 60 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 4
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 4e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 9 in	Silty clay	slow	1.3 to 1.6 in	7.4 to 8.4	.24	.24
Bss -- 9 to 30 in	Clay	very slow	2.5 to 3.3 in	7.9 to 9.0	.24	.24
Bssy -- 30 to 50 in	Clay	very slow	2.4 to 3.2 in	7.9 to 9.0	.24	.24
Cr -- 50 to 60 in	Bedrock	very slow				

Pierre and similar soils

Extent: about 15 percent of the unit
Landform(s): hills, plains
Slope gradient: 4 to 7 percent
Parent material: clayey residuum weathered from shale
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 4e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Ecological site(s):

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 4 in		moderately slow	0.6 to 0.7 in	7.4 to 8.4	.20	.20
Bssy -- 4 to 31 in		very slow	3.8 to 4.3 in	7.4 to 9.0	.28	.28
Cr -- 31 to 60 in		slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Pierre and similar soils: 15 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Lo--Lohmiller silty clay, 3 to 7 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 120 to 135 days

Lohmiller and similar soils

Extent: about 85 percent of the unit
Landform(s): flood plains, plains, terraces
Slope gradient: 3 to 7 percent
Parent material: alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 9 in	Silty clay loam	moderately slow	1.4 to 1.8 in	7.4 to 8.4	.32	.32
C -- 9 to 60 in	Stratified silty clay to silty clay loam	slow	7.1 to 9.1 in	7.9 to 8.4	.37	.37

Minor Components

McRae and similar soils: 9 percent of the unit
Heldt and similar soils: 6 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Mk--McKenzie clay, 0 to 1 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 34 to 45 degrees F
Frost-free period: 120 to 135 days

McKenzie and similar soils

Extent: about 85 percent of the unit
Landform(s): depressions, plains
Slope gradient: 0 to 1 percent
Parent material: clayey alluvium
Restrictive feature(s): none
Seasonal high water table: approximately 0 inches
Flooding hazard: none
Ponding hazard: frequent

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 6s
Drainage class: poorly drained
Hydric soil: yes
Hydrologic group: D
Potential frost action: low

Ecological site(s): Overflow (Ov) RRU 58A-C 11-14" p.z.

Representative soil profile:

	Texture	Permeability	Available water capacity	pH	Kw	Kf
Ag -- 0 to 5 in	Clay	very slow	0.7 to 0.9 in	6.6 to 9.0	.24	.24
Bg -- 5 to 16 in	Clay	very slow	1.4 to 1.9 in	6.6 to 9.0	.24	.24
Cg -- 16 to 65 in	Clay	very slow	6.3 to 8.3 in	7.9 to 9.0	.24	.24

Minor Components

Heldt and similar soils: 3 percent of the unit
Kyle and similar soils: 4 percent of the unit
Vananda and similar soils: 8 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Mn--McRae loam, 1 to 4 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 45 to 48 degrees F
Frost-free period: 120 to 135 days

McRae and similar soils

Extent: about 85 percent of the unit
Landform(s): fans, plains, terraces
Slope gradient: 1 to 4 percent
Parent material: loamy alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: B
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 5 in	Loam	moderate	0.9 to 1.0 in	7.4 to 8.4	.28	.28
Bk -- 5 to 11 in	Loam	moderate	0.9 to 1.1 in	7.4 to 8.4	.32	.32
C -- 11 to 60 in	Loam	moderate	7.8 to 8.8 in	7.4 to 9.0	.32	.32

Minor Components

Fort Collins and similar soils: 6 percent of the unit
Haverson and similar soils: 9 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Mt--McRae-Hysham loams, 0 to 1 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 39 to 48 degrees F
Frost-free period: 120 to 135 days

McRae and similar soils

Extent: about 65 percent of the unit
Landform(s): fans, plains, terraces
Slope gradient: 0 to 1 percent
Parent material: loamy alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: no
Hydrologic group: B
Potential frost action: moderate

Ecological site(s): ---

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 5 in	Loam	moderate	0.9 to 1.0 in	7.4 to 8.4	.28	.28
Bk -- 5 to 11 in	Loam	moderate	0.9 to 1.1 in	7.4 to 8.4	.32	.32
C -- 11 to 60 in	Loam	moderate	7.8 to 8.8 in	7.4 to 9.0	.32	.32

Hysham and similar soils

Extent: about 30 percent of the unit
Landform(s): flood plains, plains, terraces
Slope gradient: 0 to 1 percent
Parent material: loamy alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 6s
Drainage class: well drained
Hydric soil: no
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): ---

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 7 in	Loam	moderate	1.0 to 1.1 in	7.3 to 9.6	.37	.37
C -- 7 to 60 in	Stratified clay loam to sandy loam	slow	5.3 to 6.3 in	8.4 to 9.6	.37	.37

Minor Components

Lohmiller and similar soils: 5 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Mw--Midway-Razor clay loams, 4 to 7 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature:
Frost-free period: 120 to 135 days

Midway and similar soils

Extent: about 65 percent of the unit
Landform(s): hills, plains
Slope gradient: 4 to 7 percent
Parent material: clayey residuum
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 6s
Drainage class: well drained
Hydric soil: unranked
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 6 in	Clay loam	moderately slow	1.0 to 1.2 in	6.6 to 7.8	.32	.32
C -- 6 to 12 in	Clay loam	slow	0.9 to 1.1 in	7.4 to 8.4	.28	.28
Cr -- 12 to 60 in	Bedrock	slow				

Razor and similar soils

Extent: about 25 percent of the unit
Landform(s): hills, plains
Slope gradient: 4 to 6 percent
Parent material: residuum weathered from calcareous shale
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: unranked
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 5 in	Clay loam	slow	0.7 to 0.9 in	6.6 to 7.8	.24	.24
Bw -- 5 to 8 in	Clay loam	slow	0.4 to 0.5 in	6.6 to 8.4	.28	.28
Bk -- 8 to 29 in	Very channery clay loam	slow	2.1 to 2.6 in	7.4 to 9.0	.10	.32
Cr -- 29 to 60 in	Bedrock	slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Elso and similar soils: 2 percent of the unit
Midway and similar soils: 5 percent of the unit
Bainville and similar soils: 3 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

My--Midway-Shale outcrop complex

Mean annual precipitation: 12 to 14 inches
Mean annual temperature:
Frost-free period: 120 to 135 days

Midway and similar soils

Extent: about 50 percent of the unit
Landform(s): hills, plains
Slope gradient: 5 to 25 percent
Parent material: clayey residuum
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 7e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey-Steep (CyStp) RRU 58A-C 11-14" p.z. Deleted. Refer to site: R058A

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in	Clay loam	moderately slow	1.0 to 1.2 in	6.6 to 7.8	.32	.32
C --	6 to 12 in	Clay loam	slow	0.9 to 1.1 in	7.4 to 8.4	.28	.28
Cr --	12 to 60 in	Bedrock	slow				

Rock outcrop, shale

Extent: about 25 percent of the unit
Landform(s):
Slope gradient:
Parent material:
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Land capability class, nonirrigated:
Drainage class:
Hydric soil: no
Hydrologic group:
Potential frost action:

Ecological site(s): ---

Representative soil profile:

Texture	Permeability	Available water capacity	pH	Kw	Kf
none					

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Lohmiller and similar soils: 10 percent of the unit
Bainville and similar soils: 10 percent of the unit
Elso and similar soils: 5 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Rc--Razor-Cushman complex, 2 to 4 percent slopes

Mean annual precipitation: 11 to 14 inches
Mean annual temperature: 39 to 48 degrees F
Frost-free period: 120 to 135 days

Razor and similar soils

Extent: about 55 percent of the unit
Landform(s): hills, plains
Slope gradient: 2 to 4 percent
Parent material: residuum weathered from calcareous shale
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: unranked
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A --	0 to 5 in	Clay loam	slow	0.7 to 0.9 in	6.6 to 7.8	.24	.24
Bw --	5 to 8 in	Clay loam	slow	0.4 to 0.5 in	6.6 to 8.4	.28	.28
Bk --	8 to 33 in	Very channery clay loam	slow	2.5 to 3.0 in	7.4 to 9.0	.10	.32
Cr --	33 to 60 in	Bedrock	slow				

Cushman and similar soils

Extent: about 35 percent of the unit
Landform(s): hills, plains
Slope gradient: 2 to 4 percent
Parent material: residuum weathered from sandstone and shale
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 3
Wind erodibility group (WEG): 5
Wind erodibility index (WEI): 56
Land capability class, nonirrigated: 3e
Drainage class: well drained
Hydric soil: unranked
Hydrologic group: C
Potential frost action: moderate

Ecological site(s): Silty (Si) RRU 58A-C 11-14" p.z.

Representative soil profile:		*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A --	0 to 4 in	Loam	moderate	0.6 to 0.8 in	6.6 to 7.3	.37	.37
Bt --	4 to 13 in	Clay loam	moderate	1.3 to 1.6 in	7.4 to 8.4	.28	.28
Bk --	13 to 28 in	Loam	moderate	2.4 to 3.0 in	7.4 to 8.4	.43	.43
Cr --	28 to 60 in	Bedrock	slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Minor Components

Bainville and similar soils: 5 percent of the unit
Worland and similar soils: 5 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Sm--Shale outcrop-Midway complex, 15 to 35 percent slopes

Mean annual precipitation:
Mean annual temperature:
Frost-free period:

Rock outcrop, shale

Extent: about 50 percent of the unit
Landform(s):
Slope gradient:
Parent material:
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor):
Wind erodibility group (WEG):
Wind erodibility index (WEI):
Land capability class, nonirrigated:
Drainage class:
Hydric soil: no
Hydrologic group:
Potential frost action:

Ecological site(s): ---

Representative soil profile: none

Texture	Permeability	Available water capacity	pH	Kw	Kf

Midway and similar soils

Extent: about 35 percent of the unit
Landform(s): hills, plains
Slope gradient: 15 to 35 percent
Parent material: clayey residuum
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey-Steep (CyStp) RRU 58A-C 11-14" p.z. Deleted. Refer to site: R058A

Representative soil profile:

		Texture	Permeability	Available water capacity	pH	Kw	Kf
A --	0 to 6 in	Clay	slow	0.9 to 1.1 in	6.6 to 7.8	.24	.24
C --	6 to 12 in	Clay	slow	0.9 to 1.1 in	7.4 to 8.4	.28	.28
Cr --	12 to 60 in	Bedrock	slow				

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Elso and similar soils

Extent: about 15 percent of the unit
Landform(s): hills, plains
Slope gradient: 15 to 35 percent
Parent material: residuum weathered from sedimentary rock
Restrictive feature(s): paralithic bedrock at 10 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 4L
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7e
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: moderate

Ecological site(s):

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 2 in		moderate	0.3 to 0.4 in	7.4 to 9.0	.24	.24
Bk1 -- 2 to 5 in		moderate	0.5 to 0.6 in	7.4 to 9.0	.43	.43
Bk2 -- 5 to 12 in		moderate	1.0 to 1.3 in	7.4 to 9.0	.43	.43
Cr -- 12 to 60 in		slow				

Minor Components

Elso and similar soils: 15 percent of the unit

Soils Inventory Report

MOUNTAIN VIEW COLONY INC

Map Unit Symbol	Acres	Percent
182D	19.6	0%
282D	0.3	0%
354B	1143.7	27%
453C	761	18%
81B	1223	29%
83D	0	0%
Ay	56	1%
Bf	36.6	1%
Bl	204	5%
Bs	29.3	1%
Ec	17.1	0%
El	86.2	2%
Ft	11.4	0%
He	1.5	0%
Hm	27.5	1%
Ho	15	0%
Hx	0.9	0%
Kn	28.4	1%
Lo	74.8	2%
Mk	31.8	1%
Mn	175	4%
Mt	6.8	0%
Mw	144.4	3%
My	5.2	0%
Rc	8.8	0%
Sm	1	0%
Va	30.1	1%
Wo	31.1	1%
Total:	4170.5	100%

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Wo--Worland fine sandy loam, 2 to 7 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 39 to 45 degrees F
Frost-free period: 120 to 135 days

Worland and similar soils

Extent: about 85 percent of the unit
Landform(s): hills, plains
Slope gradient: 2 to 7 percent
Parent material: residuum weathered from sandstone
Restrictive feature(s): paralithic bedrock at 20 to 40 inches
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 4
Wind erodibility group (WEG): 3
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 4e
Drainage class: well drained
Hydric soil: no
Hydrologic group: A
Potential frost action: moderate

Ecological site(s): Sandy (Sy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
Ap -- 0 to 4 in	Fine sandy loam	moderately rapid	0.5 to 0.6 in	7.4 to 8.4	.28	.28
C -- 4 to 40 in	Fine sandy loam	moderately rapid	4.0 to 5.1 in	7.4 to 8.4	.37	.37
R -- 40 to 60 in	Bedrock	slow				

Minor Components

Bainville and similar soils: 9 percent of the unit
Travessilla and similar soils: 6 percent of the unit

[Data apply to the entire extent of the map unit within the survey area. Map unit and soil properties for a specific parcel of land may vary somewhat and should be determined by onsite investigation.]

Va--Vananda silty clay, 0 to 1 percent slopes

Mean annual precipitation: 12 to 14 inches
Mean annual temperature: 45 to 46 degrees F
Frost-free period: 120 to 135 days

Vananda and similar soils

Extent: about 90 percent of the unit
Landform(s): fans, lakebeds (relict), plains, terraces
Slope gradient: 0 to 1 percent
Parent material: clayey alluvium
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding hazard: none
Ponding hazard: none

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 4
Wind erodibility index (WEI): 86
Land capability class, nonirrigated: 7s
Drainage class: well drained
Hydric soil: no
Hydrologic group: D
Potential frost action: low

Ecological site(s): Clayey (Cy) RRU 58A-C 11-14" p.z.

Representative soil profile:	*Texture*	*Permeability*	*Available water capacity*	*pH*	*Kw*	*Kf*
A -- 0 to 3 in	Silty clay	slow	0.4 to 0.4 in	7.9 to 8.4	.20	.20
B -- 3 to 17 in	Clay	very slow	1.1 to 1.4 in	8.5 to 9.0	.24	.24
C -- 17 to 62 in	Clay	very slow	3.6 to 4.0 in	8.4 to 9.6	.24	.24

Minor Components

McKenzie and similar soils: 5 percent of the unit
Bone and similar soils: 5 percent of the unit